REMARKS

As detailed above, Applicants have amended current Claims 22 and 28 to remove some reference labels. Applicants submit that the claims are now in proper form.

Applicants have also added new Claims 29-35 to the application. Claims 29-35 are presented as counterparts to Claims 1-7 of U.S. Application No. 10/753,927, which published under publication number U.S. 2004/0213334 on October 28, 2004 (hereinafter "'927 application"). The '927 application was filed on January 8, 2004 and claims priority from a provisional application filed on January 10, 2003, which is after Applicants' priority date.

While Claims 1-7 of the '927 application presently stand rejected, counterpart Claims 29-35 are presented in the present application as a precaution in light of 35 U.S.C. § 135(b)(2). Attachment A to this submission identifies relevant portions of the specification that support the subject matter of newly added Claims 29-35.

Respectfully submitted,

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Elaine Kelly

CLT01/4758418v1

ATTACHMENT A

New claims added by amendment	Exemplary support in PCT/SE2003/001544
29. A software receiver comprising:	
A receiver capable of receiving a radio signal;	Consequently, the invention offers an excellent instrument for receiving and decoding any type of spread spectrum signals in a general software radio receiver. 12:19-21.
means for digitizing the radio signal;	The receiver 1500 includes radio front end unit 1510, an interface unit 1520 and a digital processor unit 1530. The radio front end unit 1510 is adapted to receive a continuous radio signal S_{HF}, and in response thereto produce a corresponding electrical signal S_{IF} which has a comparatively high frequency. The interface unit 1520 is adapted to receive the electrical signal S_{IF}, and in response thereto, produce a sequence of sample values that represents the same information as the electrical signal S_{IF} and is divided into data words d(k). 29:3-12.
and a software correlator capable of mixing the digitized radio signal to form a baseband signal using bit-wise parallelism.	This adaptation is advantageous because thereby several signal samples may be processed in parallel by means of comparatively simple operators. 6:25-32 Preferably, the multiplication between the data word d(k) and the in-phase representation f_{IFI} respective the quadrature-phase representation f_{IFQ} of the carrier frequency-phase candidate vector $V_{f\varphi}(f_{IF\text{-}C}, \varphi_C)$ are performed by means of XOR- or SIMD operations (i.e. 1-bit and multiple bits multiplications respectively). This is namely possible if the data word d(k) and the vector $V_{f\varphi}(f_{IF\text{-}C}, \varphi_C)$ have compatible data formats. 26:11-17.
30. The software receiver of claim 1 wherein said software correlator comprises: means for computing correlations between the baseband signal and at least one pseudo-random number (PRN) code using the bit-wise parallelism.	This preparation involves pre-generating a multitude of code vectors, which each represents a particular code sequence of the at least one signal source specific code sequence. Moreover, according to the invention, the correlation step involves multiplying at least each i vector in a sub-group of the code vectors with at least one vector, which is derived from the data word. This strategy is advantageous because the proposed vector approach makes it possible for a digital processor (e.g. a micro-processor) to process multiple signal samples in parallel during each clock cycle and thus make very efficient use of the processor. 4:14-25. According to another preferred embodiment of this aspect of the invention, the at least one signal source specific code sequence represents so-called pseudo random noise. 5:6-8.
31. The software receiver of claim 2 wherein said software correlator further comprises: means for computing accumulations from the correlations using the bit-wise parallelism.	After that, a resulting data word $D_{R\text{-}IE}(k)$, $D_{R\text{-}IP}(k)$, $D_{R\text{-}IL}(k)$, $D_{R\text{-}QE}(k)$, $D_{R\text{-}QP}(k)$ and $D_{R\text{-}QL}(k)$ may be derived from the each of the despread symbol strings $\Lambda_{IP}(k)$, $\Lambda_{IE}(k)$, $\Lambda_{IL}(k)$, $\Lambda_{QP}(k)$, $\Lambda_{QE}(k)$ and $\Lambda_{QL}(k)$ respectively by adding the elements in the respective string together. If the strings represent un-packed data, the processor may simply perform the relevant adding operation to obtain the resulting data word $D_R(k)$. If however, the strings represent packed data, the resulting data word $D_R(k)$ is, according to a preferred embodiment of the invention, derived by looking up a pre-generated value in a table 1310 based on the bit pattern given by the respective despread symbol string $\Lambda_{IP}(k)$, $\Lambda_{IE}(k)$, $\Lambda_{IL}(k)$, $\Lambda_{QP}(k)$, $\Lambda_{QE}(k)$ and $\Lambda_{QL}(k)$. According to a preferred embodiment of the invention, in addition to the individual data words $D_{R\text{-}IE}(k)$, $D_{R\text{-}IP}(k)$, $D_{R\text{-}IL}(k)$, $D_{R\text{-}QE}(k)$, $D_{R\text{-}QP}(k)$ and $D_{R\text{-}QL}(k)$, corresponding accumulated data words are

New claims added by amendment	Exemplary support in PCT/SE2003/001544
	produced, such that after having generated a data word $D_R(k)$, the sum of all data words $D_R(1)$ to $D_R(k)$ is also obtained. Hence, when the data word d(N) has been processed, the resulting sum $D_R(1)$ to $D_R(N)$ is also at hand. 27:10-28.
32. The software receiver of claim 3 further comprising: application-specific code capable of computing navigation data using the accumulations.	Furthermore, by pre-generating the code vectors valuable processing capacity is saved, which in turn renders it possible to deal with a sufficient amount of input data per time unit in order to, for example track navigation signals that are transmitted by the satellites in a navigation satellite system. 4:25-29.
33. The software receiver of claim 1 wherein said means for digitizing comprises: means for down-converting the radio signal to an intermediate frequency;	According to another preferred embodiment of this aspect of the invention, the receiving step involves down conversion of an incoming high-frequency signal to an intermediate frequency signal. 5:17-20 Therefore, it is generally sufficient if the spread spectrum signal is downconverted to an intermediate frequency f_{IF} at around 1 MHz in order to enable further signal processing at a lower frequency. 15:4-7.
and a digitizer capable of digitizing the intermediate frequency.	The receiver 1500 includes radio front end unit 1510, an interface unit 1520 and a digital processor unit 1530. The radio front end unit 1510 is adapted to receive a continuous radio signal S_{HF}, and in response thereto produce a corresponding electrical signal S_{IF} which has a comparatively high frequency. The interface unit 1520 is adapted to receive the electrical signal S_{IF}, and in response thereto, produce a sequence of sample values that represents the same information as the electrical signal $S_=$ and is divided into data words d(k). 29:3-12.
34. The software receiver of claim 5 wherein said digitizer produces at least one bit/sample.	A step 1610 then receives a continuous signal of a comparatively high frequency. A following step 1620 samples the continuous signal at a basic sampling rate, whereby a resulting sequence of time discrete signal samples is produced. Each sample is also quantised (either with a relatively low-resolution, such as with 1 bit per sample value, or with a relatively high resolution depending on the application and the number of data bits per samples delivered from the radio front end unit 1510), such that a corresponding level-discrete sample value is obtained. 29:27-30:3
35. The software receiver of claim 5 wherein said digitizer is an analog to digital converter.	The receiver 1500 includes radio front end unit 1510, an interface unit 1520 and a digital processor unit 1530. The radio front end unit 1510 is adapted to receive a continuous radio signal S_{HF}, and in response thereto produce a corresponding electrical signal S_{IF} which has a comparatively high frequency. The interface unit 1520 is adapted to receive the electrical signal S_{IF}, and in response thereto, produce a sequence of sample values that represents the same information as the electrical signal $S_=$ and is divided into data words d(k). 29:3-12.